

**THE BUDGETARY AND ECONOMIC
EFFECTS OF OIL TAXES**

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PREFACE

Taxes on oil or oil products have been suggested as a means of reducing the federal deficit. Beyond their revenue effects, oil taxes would have important implications for the domestic oil industry, for the economy in general, and for the security of U.S. energy supplies. At the request of the Chairman and the Ranking Minority Member of the Senate Budget Committee, this study investigates the budgetary and economic effects of various oil tax proposals. In keeping with the mandate of the Congressional Budget Office to provide objective analysis, the study makes no recommendations.

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SUMMARY

This paper analyzes taxes on oil or oil products. Such taxes have been proposed for a variety of purposes. One aim is to reduce the federal deficit. Another is to reduce U.S. dependence on imported oil and its attendant risks to the economy and to national security. Some advocates of oil taxes see them as driving down further the world price of oil. Taxes are also favored as a way to assist the domestic oil industry, which is undergoing a severe contraction.

Oil taxes would accomplish these goals in varying degree, depending on how a specific tax was designed. At one end of the spectrum, an oil import tariff would encourage conservation, the substitution of other fuels, and domestic exploration and production. At the other end, a general energy tax--such as an ad valorem tax on all fuels consumed--would lead to reductions in energy use but would do nothing to encourage the production and consumption of oil substitutes or the exploration and development of domestic oil supplies. Oil taxes also raise a variety of questions as to their effects on the economy, on foreign trade, on the distribution of income, and on specific industries such as refining.

This paper examines five oil tax options:

- o An import tariff of \$5.00 per barrel on imported crude oil and \$10.00 per barrel on imported refined products;
- o A \$5.00 per barrel excise tax on all crude oil (domestic and imported) and \$5.00 per barrel on imported refined products;
- o A \$0.12 per gallon motor fuels tax;
- o A 5 percent sales tax on all energy consumption; and
- o A combination of a \$0.06 per gallon tax on motor fuels together with a \$2.50 tariff on imported crude and refined products.

Since each tax would have different effects depending on the underlying level of world oil prices, and since there can be no certainty as to future oil prices, this report examines the taxes under three alternative assumptions:

that oil prices hold steady over the next five years at levels of \$23.00 per barrel, \$18.00 per barrel, or \$13.00 per barrel.

Economic Assumptions

In estimating the economic and budgetary impacts of any tax, one must make some simplifying assumptions. In this case, perhaps the most important involves the operation of energy markets.

The economic effects of energy taxes depend to some degree on the response of foreign producers. This is difficult to forecast, because the governments of producing countries often play a crucial role in determining production levels. At one extreme, producers may respond by reducing production in order to maintain world prices at their pre-tax levels. At the other extreme, they may not change production at all and accept a fall in price equal to the implied per unit tax. This analysis makes an intermediate assumption. It assumes that world prices would fall, but by considerably less than the amount of the tax. Consequently, oil taxes would to some extent raise energy prices for U.S. consumers.

Analysts must also make some assumption about the behavior of aggregate production levels (gross national product, or GNP) in response to a tax. If foreign producers were forced to lower their prices, an oil tax could stimulate the economy and raise GNP. But there are offsetting influences. In the short term, higher taxes of any sort could lower GNP since they reduce household income. But to the extent that taxes also reduce the federal deficit, they may tend to reduce interest rates and the international value of the dollar, which would tend to raise GNP. In view of these various offsetting influences, and the fact that the net effect of any of the taxes on nominal GNP is likely to be rather small, CBO has followed the convention that nominal GNP (not adjusted for inflation) remains approximately constant in response to a tax.

Revenue and Outlay Effects

Oil taxes affect the budget on both the revenue and the outlay sides. On the revenue side, the federal government would collect the tariff or tax directly. In addition, some taxes would increase domestic oil prices and the stream of revenues produced by the crude oil windfall profit tax. Finally, on the assumption that nominal GNP remains approximately constant after the imposition of a tax, the taxes and resulting price increases in the oil sector would reduce the income and profit streams of corporations in other sectors of the economy, correspondingly reducing the taxes they pay to the government.

On the outlay side, the federal government is both a producer and a consumer of oil. As a producer, it would receive more royalties from oil and gas production from the outer continental shelf and other federal lands if oil taxes were to raise wellhead oil and gas prices. On the consumption side, federal agencies, principally the Department of Defense, use roughly 500,000 barrels of refined petroleum products per day; they would pay more if prices rose. Thus the net budgetary effect of oil taxes is likely to be less than the initial revenue collected.

In general, broader-based taxes, such as an excise tax or an energy tax, would reduce the federal deficit by more than would more narrowly defined taxes, such as an import tariff or a motor fuels tax, at the same level of tax. This is because the former would be imposed on a broader category of oil and/or energy sources. Moreover, because windfall profit tax collections and domestic oil prices are positively associated, the revenue differential between a tariff and an excise tax would widen if domestic oil prices fell. Estimates of the net budgetary effects of the tax proposals are given in the Summary Table. These estimates differ somewhat from those provided in CBO's *Reducing the Deficit: Spending and Revenue Options* because different assumptions regarding oil prices and other factors are used in this analysis. ¹

It should be noted that at the \$23.00 and \$18.00 levels, the import tariff of \$5.00 per barrel on crude oil and \$10.00 per barrel on refined products would have the same revenue effect as a flat \$5.00 tariff on both imported crude and refined products: the extra \$5.00 on refined products would make their importation prohibitive, resulting in no new funds. Consumer costs, in contrast to federal revenues, might rise as less efficient domestic refining capacity was brought into production. At \$13.00 per barrel, however, petroleum product consumption would exceed domestic refining capacity, and the extra tariff on refined products would lead to additional revenues.

Energy Market Effects

The tax proposals described above raise a number of issues for federal policy and for the energy industry. Reductions in oil imports caused by oil taxes would be greater with lower initial oil prices, since a fixed tax represents a greater percentage increase in oil prices as underlying, pre-tax prices fall.

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1. In administering the budget process, the baseline assumptions of *Reducing the Deficit* would be used for scoring purposes.

SUMMARY TABLE. NET DEFICIT REDUCTION UNDER FIVE OIL
TAX ALTERNATIVES, FISCAL YEARS 1987-1991
(In billions of current dollars)

Tax Alternative	1987	1988	1989	1990	1991
Pre-tax Oil Price: \$23.00 per Barrel					
Import Tariff	8.1	8.3	8.6	8.8	9.0
Excise Tax	22.1	22.5	23.0	23.2	23.5
Motor Fuels Tax	8.8	8.9	9.1	9.1	9.3
Energy Tax	15.1	15.6	16.2	16.6	17.1
Combination of Taxes	8.6	8.7	9.0	9.2	9.6
Pre-tax Oil Price: \$18.00 per Barrel					
Import Tariff	8.2	8.8	9.3	10.0	10.5
Excise Tax	24.0	24.6	25.1	25.5	26.0
Motor Fuels Tax	9.0	9.1	9.2	9.3	9.5
Energy Tax	14.1	14.5	15.2	15.7	16.2
Combination of Taxes	9.2	9.5	10.0	10.4	11.0
Pre-tax Oil Price: \$13.00 per Barrel					
Import Tariff	8.9	9.9	10.6	11.5	12.2
Excise Tax	25.4	26.3	27.1	27.8	28.5
Motor Fuels Tax	9.2	9.2	9.3	9.3	9.5
Energy Tax	13.0	13.5	14.2	14.8	15.3
Combination of Taxes	10.1	10.8	11.5	12.2	13.0

SOURCE: Congressional Budget Office.

NOTES: *Import Tariff:* \$5.00 per barrel imposed on crude oil and \$10.00 per barrel on refined products.

Excise Tax: \$5.00 per barrel imposed on all domestic and foreign crude oil and refined products.

Motor Fuels Tax: 12 cents per gallon (\$5.04 per barrel) on all motor fuels.

Energy Tax: Ad valorem tax of 5 percent of final sale value of domestic and imported oil, natural gas, coal, and electricity.

Combination of Taxes: \$2.50 per barrel on imported oil and 6 cents per gallon on motor fuels.

At \$13.00 per barrel, oil imports in the absence of taxes are projected to reach 7.3 million barrels per day. An import tariff could reduce this amount by close to 1 million barrels per day by stimulating conservation and fuel substitution, and, very importantly, by softening the impact of low world prices on domestic oil production. Other taxes would not reduce imports by as much, because they would not provide domestic producers with additional incentives to explore or produce. At \$23.00 and \$18.00 per barrel, the effect of price changes on domestic production would not be as drastic, and hence an import tariff would not have as great an advantage over other taxes in this regard.

The effects of any oil tax in reducing oil imports, putting downward pressure on the world price of oil, and providing protection for the U.S. oil industry would be interrelated. Oil taxes would put downward pressure on the world price of oil only insofar as they led to a reduction in the U.S. demand for oil imports, and that reduction would be greater if a tax encouraged domestic exploration and production.

An oil import tariff would be superior to other energy taxes on this score. By raising the price of oil imports, an oil import tariff would encourage all activities that could substitute for oil imports: domestic oil production, production of substitutes for oil, conservation of oil, and substitution of other fuels for oil. It would therefore lead to the greatest possible reduction in oil imports (for a given level of tax) and provide the most assistance to domestic producers. An excise tax on foreign and domestic oil would lead to the same reduction in total oil consumption, but would burden rather than encourage domestic oil production, leading to a smaller reduction in oil imports and, therefore, putting less downward pressure on the price charged by foreign producers. A motor fuels tax would lead to a smaller reduction in oil consumption because it would be directed at only one form of oil use and would therefore preclude many oil conservation possibilities. It would also provide no incentives for expanded domestic production. Finally, an ad valorem tax on the consumption of all fuels would lead to energy conservation, but discourage the production of domestic oil as well as all U.S. energy supply sources. These last two taxes, therefore, would do less to reduce world oil prices, encourage a reduction in oil imports, and assist the domestic oil industry.

The U.S. Refining Industry

The two-tiered tariff (\$5.00 on crude imports and \$10.00 on refined product imports) is of special interest because it would raise consumer prices and domestic refiner and shipping company profits while providing no incentives

for domestic oil exploration and production beyond those offered by a single \$5.00 levy on imported crude oil and refined products. Even if domestic refining capacity was sufficient to fulfill domestic needs entirely, this would require using domestic refineries that are older and less efficient than existing capacity.

The East Coast would be at some disadvantage under a two-tiered tariff, since it relies heavily on refined product imports and has very little excess refining capacity of its own. The difference could be supplied from Gulf Coast refineries, but product pipelines from the Gulf Coast have limited capacity and would have to be supplemented by tankers and barges at higher cost. All product shipments among ports in the United States would have to be made on U.S. flag ships, whose rates are already higher than those of foreign ships and are likely to become more so at higher utilization rates.

The most common arguments for two-tiered tariffs are that national security requires a stronger domestic refining industry, and that U.S. refiners suffer a disadvantage in having to pay pollution abatement costs. But the risks posed to national security from oil imports generally concern the threat to supplies of crude oil rather than refined products. A cutoff of refined products from the Persian Gulf--the most severe likely product disruption--would cause minor damage compared with a cessation of crude oil flow from the same countries. In 1985, only 0.4 percent of U.S. consumption of refined products was drawn from Persian Gulf sources, although that share is growing. Even if refining capacity was of paramount importance, a more appropriate response might be to fill part of the Strategic Petroleum Reserve with refined products in place of crude oil.

The other argument advanced for a two-tiered tariff concerns the costs U.S. refiners bear for pollution abatement, and holds that domestic refiners need protection to offset these costs. On net, the costs are much less than the \$5.00 per barrel differential found in one version of the proposed tariff--perhaps as low as \$0.50 per barrel, if the cost of removing the lead from gasoline to meet U.S. environmental statutes is also included. And even if the pollution abatement costs were higher, there is no precedent for offsetting them by imposing protective tariffs. Indeed, such an offset would encourage pollution.

Finally, like the oil regulations of the 1970s, two-tiered tariffs would encourage the construction of refineries that would be viable only because of federal protection. Half the refining capacity that has shut down since 1981 closed not because it was old, but because it had been built in the 1970s to take advantage of biases in federal regulations (often called the

"small refiners' bias") and could not match the efficiency of internationally oriented refineries on its own terms. After oil was decontrolled, such capacity had to be shut down. This proposal would once again promote the creation of refining capacity dependent on federal protection.

International Cooperation

Oil taxes would have their maximum depressing effect on world crude oil prices if imposed by all or most oil-consuming countries. Acting in concert, these countries could force producers to accept a larger proportion of any oil tax than if the United States acted alone. The result would be a smaller decrease in oil imports and a smaller tax burden.

In fact, other industrialized countries already have higher levels of oil taxes than the United States. Most of these taxes are gasoline taxes; motor fuels taxes are four to ten times higher in these countries. Taxes on other fuels also exist: Japan, for example, has an \$18.00 per barrel tax on distillate fuel while the United States has none. Higher energy taxes in these countries reflect their far greater use of sales and consumption taxes as revenue sources. Industry sources note that many of these countries appear prepared to raise their oil taxes again now that world oil prices have fallen.

"Variable Tariffs"

One variant on the oil import tariff, proposed in S. 1997 by Senator Wallop, would set its value according to the difference between the existing world price of oil and some "benchmark" price. In S. 1997, this benchmark price is \$22.00 per barrel; thus if oil prices were to stay at \$13.00 per barrel, the tariff would equal \$9.00 per barrel.

The variable tariff would, in essence, provide a floor price for the domestic oil industry. If oil prices were to rise again next winter or in the next few years, as some analysts believe they will, such a levy would protect the domestic oil industry from a harmful "whipsaw" effect in which some production is forced to close as prices fall and is no longer available when they rise again. The corresponding disadvantage of such a proposal is that it would place an artificial restraint on oil imports that are less expensive than the benchmark price. If oil prices had found their long-term level below the benchmark, the tariff would redistribute income from other industries and regions to domestic oil producers, but would do so only at a cost to economic efficiency. This cost might be sizable, since only a fraction of current domestic oil production is jeopardized by current low prices; a variable

tariff might give other domestic oil producers a subsidy they do not need in order to continue producing. Moreover, if the goal of energy policy is to encourage marginal producers to continue supplying oil now that the price is low, there may be better ways of accomplishing this than a variable tax.

Distributional Issues

At oil prices of \$23.00 per barrel, the energy taxes discussed in this paper generally would cost families an average of 0.3 percent of their annual income, or about \$85.00 per year at current price levels. Using another measure, these added energy costs would amount to 0.4 percent of their total expenditures. The latter may be a better measure by which to assess the distributional effects of the tax because families usually choose a level of expenditure that reflects their expectations of long-term income.

Measured as a percent of total expenditures, the tax burden would not vary widely for families with different incomes. In absolute terms, at current price levels, the added expenditures would range from about \$35.00 per year for families with annual incomes of less than \$5,000 to \$130 per year for families with annual incomes of \$50,000 or more, or from 0.4 percent to 0.3 percent of total expenditures.

Except for the two-tiered tariff, which would require the use of uneconomic refining capacity and place a heavier burden on the Northeast, the increase in energy expenditures would also be roughly the same across regions. In the Northeast, additional energy expenditures under the two-tiered tariff would be about \$115 per year at current prices or 0.6 percent of total expenditures, while the rest of the country would spend no more than \$82.00 per year or 0.4 percent of total expenditures. At \$13.00 per barrel, the two-tiered tariff would penalize Northeast consumers even more, raising their energy costs by \$192 per year, more than twice the cost burden imposed by other oil taxes.

CHAPTER I

INTRODUCTION

Proposals have been made to place new taxes on oil as a means of reducing the federal deficit, and for other purposes.^{1/} This paper analyzes the major features of several types of possible oil taxes: a tariff on imported crude oil and products; an excise tax on domestic and foreign crude oil and imported products; a tax on motor fuels; a broad-based energy tax on oil, natural gas, coal, and electricity; and a combination of an import tariff and a motor fuels tax. The report is intended as a general discussion of these types of taxes; any specific bill could contain features not analyzed in this paper.

The paper first discusses the rationales for energy taxation and presents the major assumptions underlying the analysis. It then analyzes the net budgetary effects of each type of tax. Subsequent chapters discuss energy policy effects, implications for trade and the international economy, and distributional consequences.

RATIONALES FOR OIL TAXES

Beyond their effects on the federal deficit, several arguments have been advanced in favor of oil taxes. These can generally be grouped into three, in which oil taxes are seen as a means to address the risks posed to the United States by uncertain foreign oil supplies; as a device to lower the world price of oil and to break the market power of monopolistic producers; and as an adjustment mechanism to buffer the domestic oil industry from swings in world oil prices.

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1. A number of bills increasing oil taxes have been introduced in the current Congress. Among those receiving the most attention are S. 1507, which would put an import tariff of \$5.00 on crude oil and \$10.00 on refined products so long as world oil prices were under \$25.00 per barrel; S. 1997, which would put an import tariff on imported oil equal to the difference between the world price and \$22.00 per barrel; and S. 1412, which would put a \$10.00 tariff on imported oil. Other bills include S. 735, H.R. 4117, H.R. 1909, H.R. 1541, and H.R. 1396.

The "Social Costs" of Oil Imports

Some analysts argue that oil consumption involves costs to society that are not measured in prices to the consumer. Foremost among these costs are the risks of becoming dependent upon foreign oil supplies, and the possibility of future dislocations caused by rising oil prices.^{2/} Since 1979, world oil consumption (outside the centrally planned economies) has declined significantly--from 52 million barrels per day in 1979 to 46 million barrels per day in 1985--so that the ability of any one foreign oil producer or group of producers to disrupt the U.S. and world economies by manipulating the price of oil has substantially declined.^{3/} At the same time, the importance of oil to the U.S. economy has decreased: in 1981, oil purchases totalled roughly 7 percent of gross national product (GNP), but by 1985 they had fallen to 4 percent of GNP. Moreover, the Strategic Petroleum Reserve (now equal in size to 100 days of imports) makes the U.S. economy more resistant to a disruption. Together these trends suggest that the risks of supply disruptions or price manipulation have declined.

If the risks involved in oil imports have declined, then an increase in energy taxes might unduly penalize the users and producers of oil and related commodities. Other ways of reducing the deficit, such as cuts in federal spending and/or taxes on income or consumption, might be more efficient from an economic viewpoint. But lower oil prices may in the long run have negative effects: they may encourage more U.S. and world oil consumption; discourage oil production in high-cost producing areas, most of which are outside the Organization of Petroleum Exporting Countries (OPEC) and some of which are in the United States; and again concentrate world oil supplies in the low-cost Persian Gulf fields. As shown in Table 1, should oil prices of \$13.00 per barrel persist until 1991, U.S. oil imports could rise to over 11.0 million barrels per day. Furthermore, some non-OPEC and non-Persian Gulf OPEC oil sources may begin to face depletion in the next decade. These consequences could lead to a reemergence of the "oil vulnerability" issue.^{4/}

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2. Congressional Budget Office, *The World Oil Market in the 1980s: Implications for the United States* (May 1980).
 3. For 1979 estimates, see Energy Information Administration, *1984 Annual Energy Review* (Washington, D.C.: Government Printing Office, 1985), p. 225. Equally important, the share of countries belonging to the Organization of Petroleum Exporting Countries (OPEC) in this demand has fallen from 31 million barrels per day in 1979 to 17.5 million in 1984, creating considerable excess productive capacity. Ibid., p. 221.
 4. It should be noted, however, that policies addressing this future social cost must contend with the fact that their benefits would occur in the next century, while their costs would occur today.